

R E M A R K S

Reconsideration of this application, as amended, is respectfully requested.

The December 4, 2000 Office Action and the Examiner's comments have been carefully considered. In response, the claims are amended and remarks are set forth below in a sincere effort to place the present application in condition for allowance. The amendments are supported by the application as originally filed. Therefore, no new matter is added.

REJECTION UNDER 35 USC 112

In the Office Action claims 1-8 are rejected under the second paragraph of 35 USC 112 as being indefinite. In response, claims 1-8 are amended in a sincere effort to address each of the points raised in the Office Action and to obviate the Examiner's rejection. In view of the amendment of claims 1-8, reconsideration and withdrawal of the rejection under the second paragraph of 35 USC 112 are respectfully requested.

NEW CLAIM

New claims 9-10 are added to the present application. New claims 9 and 10 additionally define the present invention and are

patentable for reasons, inter alia, for the allowance of claims 1-8.

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If the Examiner disagrees with any of the foregoing, the Examiner is respectfully requested to point out where there is support for a contrary view.

Entry of the amendment, allowance of the claims, and the passing of the application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,


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COPY OF AMENDED CLAIMS SHOWING CHANGES BEING MADE THERETO
SERIAL NO. 09/375,676

1. (Amended) A distance measuring method for measuring [the] a distance to a target by measuring [the] a time required for a beam of light to go to and return from the target, said method comprising steps of:

- 5 shooting the target with a beam of light;
 converting [the] a beam of light returned from the target
 into an electric signal and generating a light reception signal;
 generating an inversion signal by inverting a polarity of
 the light reception signal and shifting a relative potential
10 level of [two signals] said light reception signal and said
 inversion signal so as to make said light reception signal and
 said inversion signal produce an intersection;
 comparing said light reception signal and said inversion
 signal for an electric potential; and
15 determining [the] a time of reception of the beam of light
 [returning] returned from said target based on an outcome of said
 potential comparison.

2. (Amended) A distance measuring apparatus for measuring a [the] distance to a target by measuring [the] a time required for a beam of light to go to and return from the target, said apparatus comprising:

- 5 [a] light reception means for converting a received light
 into an electric signal;

[a] clamp/inversion means for clamping and inverting an output of said light reception means;

[a] comparison means for comparing the output of said light
10 reception means and an output of said clamp/inversion means; and

[a] means for identifying the time of light reception based on an outcome of said comparison means.

3. (Amended) A distance measuring apparatus according to claim 2, wherein said means for identifying the time of light reception detects [the] a time from [the] a temporal point of inversion of [the] a magnitude relationship between the output of said light reception means and the output of said clamp/inversion
5 means and [the] a temporal point of another inversion of [the] a magnitude relationship and uses a predetermined value in place of the detected time when it exceeds a limit level.

4. (Amended) A distance measuring apparatus for measuring [the] a distance to a target by measuring [the] a time required for a beam of light to go to and return from the target, said apparatus comprising:

a light reception element for converting [the] a received
5 light into an electric signal and generating a light reception signal;

a clamp/inversion circuit for inverting a polarity of said light reception signal generated by said light reception element, shifting [the] a potential of said light reception signal high

10 and generating an inversion signal intersecting said light
reception signal at two points;
a comparator for comparing said light reception signal
generated by said light reception element and said inversion
signal generated by said clamp/inversion circuit; and
15 a light reception temporal point determining circuit for
receiving [the] an output of said comparator and determining
[the] a light reception temporal point between a first temporal
point for inverting the magnitude relationship of the light
reception signal generated by said light reception element and
20 said inversion signal generated by said clamp/inversion circuit
and a second temporal point for once again inverting the
magnitude relationship thereof.

5. (Amended) A distance measuring apparatus according to
claim 4, wherein said light reception temporal point determining
circuit is provided with an upper limit value for [the] a time
between said first temporal point and said second temporal point
and adapted to take a temporal point after a predetermined time
5 from said first temporal point for [the] a second temporal time
when the upper limit value is exceeded.

6. (Amended) A distance measuring apparatus according to
claim 5, wherein the upper limit value of said light reception
temporal point determining circuit is about twice of a half of
the width of the irradiated optical pulse and said circuit is

adapted to take [the] an end of [the] a time twice as long as a
5 half of the width of the optical pulse from said first temporal
point for the second temporal point.

7. (Amended) A distance measuring apparatus according to
claim 4, wherein said light reception temporal point determining
circuit is adapted to select [the] a middle point of said first
temporal point and said second temporal point as the light
reception temporal point.

8. (Amended) A distance measuring apparatus according to
claim 5, wherein said light reception temporal point determining
circuit is adapted to select [the] a middle point of said first
temporal point and said second temporal point as the light
reception temporal point.

Please add new claims 9 and 10 as follows:

--9. A distance measuring apparatus for measuring a
distance to a target by measuring a time required for a beam of
light to go to and return from the target, said apparatus
comprising:

light emission means for emitting a beam of light to the
5 target;

light reception means for receiving a reflected light from
the target and converting the light into an electric output
signal;

clamp/inversion means for inverting a polarity of the
10 electric output signal from the light reception means so as to
obtain an inverted signal and clamping a predetermined potential
of the inverted signal so as to make the electric output signal
from the light reception means and the inverted signal intersect
each other at two points;

15 comparison means for comparing the electric output signal
from the light reception means and an output signal from the
clamp/inversion means so as to detect two intersections; and
means for identifying a time of light reception based on
the intersections detected by the comparison means.

10. A distance measuring apparatus according to claim 9,
wherein said means for identifying the time of light reception
detects the time from the temporal point of inversion of the
magnitude relationship between the output of said light reception
5 means and the output of said clamp/inversion means and the
temporal point of another inversion of the magnitude relationship
and uses a predetermined value in place of the detected time when
it exceeds a limit level.--